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RE: PATENTABILITY SEARCH FOR STORAGE SYSTEM, METHOD OF
CONTROLLING STORAGE SYSTEM, AND STORAGE DEVICE

Your File: 340300867US01

Our Docket: PSP-1041686

Dear Mr. Otsuka:

In accordance with your request, we have conducted a patentability search on the above-identified subject matter.

Enclosed with this report are copies of the search results and your disclosure materials. If after reviewing the results, you feel that the search feature (or specific search elements), the field of search, or results are not commensurate with your original request, or you would like to extend the search into additional areas, please contact us.

Sincerely,

Randy W. Lacasse

Enclosures

RWL:JT:pd

s04/psp1041686

CONFIDENTIAL
(Patentability Search)

I. SEARCH FEATURE

A method of controlling a storage system comprising a first storage device having a first storage volume provided at a first site, a second storage device having a second storage volume provided at a second site, and a third storage device having a third storage volume provided at a third site, the storage devices being connected so as to communicate with each other,

wherein the method includes the steps of:

storing a copy of data stored in the first storage volume in the second storage volume at a first time;

writing the copy of data written in the first storage volume into the third storage volume;

storing, in the third storage device, a write history of the data written in the first storage volume as a first differential management table after the first time; and

allowing the third storage device to make contents of the data stored in the second storage device to make contents of the data stored in the second storage volume consistent with contents of the data stored in the first storage volume using the first differential management table and the third storage volume of the third storage device.

II. FIELD OF SEARCH

The search of the above features was conducted in the following areas:

A. Classification search

<u>Class</u>	<u>Subclasses</u>	<u>Description</u>
707/		DATA PROCESSING: DATABASE AND FILE MANAGEMENT OR DATA STRUCTURES
	204	.. Archiving or backup
709/		ELECTRICAL COMPUTERS AND DIGITAL PROCESSING SYSTEMS: MULTICOMPUTER DATA TRANSFERRING OR PLURAL PROCESSOR SYNCHRONIZATION
	219	.. Accessing a remote server

<u>Class</u>	<u>Subclasses</u>	<u>Description (Continued)</u>
711/		ELECTRICAL COMPUTERS AND DIGITAL PROCESSING SYSTEMS: MEMORY
	148	.. Plural shared memories
	161	.. Archiving
	162	... Backup
714/		ERROR DETECTION/CORRECTION AND FAULT DETECTION/RECOVERY
	7 Reconfiguration (e.g., adding a replacement storage component)

The above subclasses represent areas deemed to contain subject matter of interest to one or more of the search features. Please note that relevant references may be classified outside of these areas. The integrity of the search is based on the records as presented to us by the United States Patent and Trademark Office (USPTO). No further integrity studies were performed. Also a key word search was performed on the USPTO full-text database including published U.S. patent applications.

III. RESULTS OF SEARCH

A. References developed as a result of search (related art is in boldface):

<u>U.S. Patent Application Publication No.</u>	<u>Inventor</u>
2002/0059505	St. Pierre
2003/0229764	Ohno
2004/0098547	Ofek
2004/0139128	Becker

B. Discussion of related references in numerical order:

The patent application publication to St. Pierre (2002/0059505) provides for a *Method and Apparatus for Differential Backup in a Computer Storage System*. Discussed is a backup storage system. A differential backup generator receives information specifying which physical segments of storage in a physical storage device have changed and generates differential backup of changed segments. A backup storage device may be included to store the differential backup. A complete backup copy of a plurality of segments of data in a computer storage system may be formed from an earlier backup copy and a first later copy (see paragraphs 36 and 37).

The patent application publication to Ohno (2003/0229764), assigned to Hitachi provides for a *Data Storage Subsystem*. Discussed is a data storage subsystem, which may be provided with an original side data storage subsystem. Each data storage subsystem may also be provided with a secondary remote-copy function that enables primary updated attribute information received from a subsystem to be remote-copied into another subsystem (see paragraph 20).

C. Discussion of background references in numerical order:

The patent application publication to Ofek (2004/0098547) provides for an *Apparatus and Methods for Transferring, Backing Up, and Restoring Data in a Computer System*. Disclosed is a secondary storage system including a secondary storage media and means for storing an abstract block set on the secondary storage media. Blocks of the logical object that have changed since an earliest point in time are identified. The identified data blocks are stored as a differential abstract block set.

The patent application publication to Becker (2004/0139128) provides for a *System and Method for Backing Up a Computer System*. Discussed is a backup manager 350 including a backup agent 354, an archive agent 358, and a restore agent 364. A log driver module 322 may forward sealed AILFC to the log creation agent 320 for transmission to backup system 340 (see figure 3, paragraphs 73 and 75).



Julia Tanese